

CLAIMS

- 1 1. A distributed network having a plurality of processors, the network
2 hardware and software comprising:
 - 3 a local counter associated with each of the processors in the distributed
4 network;
 - 5 an event register associated with each of the local counters; and
 - 6 an event logger for receiving a counter value from the local counter in response
7 to an event being registered in the event register.
- 1 2. The distributed network of claim 1 comprising a global clock wherein a
2 time stamp is calculated based on the counter value received from a counter associated
3 with a processor in the distributed network.
- 1 3. The distributed network of claim 1 wherein the event logger records data
2 concerning a type of event registered by the event register and a time an event
3 occurred.
- 1 4. The distributed network of claim 1 wherein the event register remains
2 frozen until the event register is read by the system monitor.
- 1 5. The distributed network of claim 1 comprising dynamic masking
2 mechanisms for filtering the event register outputs to differentiate between critical and
3 non-critical events.
- 1 6. The network of claim 5 wherein the masking is dynamically updated during
2 online processing.

1 7. The network of claim 1 comprising software for performing conditional
2 probability calculations based on event information stored in a history table wherein
3 the calculations are performed to determine if a probability of an event occurring has
4 exceeded a minimum threshold level and, if the threshold is exceeded, to migrate a
5 process or schedule maintenance to avoid consequences of the predicted event.

1 8. The network of claim 7 wherein the conditional probability calculations are
2 based upon events occurring within a selected time window.

1 9. The network of claim 1 wherein the event register comprises an error time
2 stamp register that receives a value from the local counter when an event occurs.

1 10. The network of claim 1 wherein the event register stores an error occurred
2 value that indicates to the network monitor that a critical event has occurred.

1 11. A method of producing a time stamp for an event occurring on a
2 distributed network including a plurality of processors comprising:

3 producing a local counter value for each of a plurality of processors in the
4 distributed network with an associated counter;

5 synchronizing the local counter at each of the processors with a global clock;
6 and

7 freezing the local counter for a processor when a critical event associated with
8 the processor occurs.

1 12. The method of claim 11 comprising establishing a history table containing
2 information concerning events associated with the critical event and the conditional
3 probabilities of the associated events during offline processing.

1 13. The method of claim 12 comprising determining during an offline phase if
2 an event is critical and whether or not online processing is possible.

1 14. The method of claim 12 comprising dynamically filtering the events based
2 on a recorded history of information associated with the occurrence of events such that
3 only certain critical events produce global interrupts.

1 15. The method of claim 12 comprising updating the conditional probability
2 information and history table during offline processing.

1 16. The method of claim 11 comprising determining during online processing
2 a type of event that occurred and determining whether to produce a global alert, synch
3 stop or machine check alert signal based upon the type of event that occurred.

1 17. The method of claim 11 comprising dynamically masking events that
2 occur based on conditional probabilistic calculations using machine learning
3 algorithms to predict an occurrence of a critical event during a specified time period.

1 18. A distributed computer system having hardware and software for
2 implementing a time stamping process for producing a time stamp associated with an
3 occurrence of an error event, the computer system comprising:

4 a plurality of local counters wherein each counter is associated with a
5 particular processor or system in the distributed computer system;

6 an event register for recording event information concerning an occurrence of
7 an event associated with the processor and event register; and

8 an event logger for receiving and logging information concerning the
9 occurrence of the events.

1 19. The distributed computer system of claim 18 comprising a global clock for
2 synchronizing the local counters.

1 20. The distributed computer system of claim 19 wherein the event logger
2 records a time stamp based upon the global clock and a local counter value received
3 from a local counter.

1 21. The distributed computer system of claim 18 comprising dynamic masks
2 created based upon historical event information for filtering events such that only
3 information concerning critical events result is stored.

1 22. The distributed computer system of claim 21 comprising software for
2 evaluating events based on conditional probabilistic calculations and scheduling
3 remedial or preventative action during online processing.

1 23. A computer-executable medium comprising instructions for producing
2 a time stamp for an event occurring on a distributed network including a plurality of
3 processors, the medium comprising instructions for:

4 producing a local counter value for each of a plurality of processors in the
5 distributed network with an associated counter;

6 synchronizing the local counter at each of the processors with a global clock;
7 and

8 freezing the local counter for a processor when an event associated with the
9 processor occurs.

1 24. The medium of claim 23 comprising an instruction for monitoring the
2 local counter with a system monitor through the use of online and offline processing.

1 25. The medium of claim 23 comprising an instruction for periodically polling
2 the local counters and storing information received in a history table.

1 26. The medium of claim 23 comprising an instruction for dynamically
2 filtering the events based on a recorded history of information associated with the
3 occurrence of events such that only critical events are reported to a system monitor.

1 27. The medium of claim 23 comprising an instruction for performing
2 conditional probability calculations to determine if a probability that a critical event
3 will occur exceeds a threshold level and performing or scheduling preventative action
4 if such threshold is exceeded.

1 28. The medium of claim 11 comprising an instruction for determining a type
2 of event that occurred and determining whether to produce a global alert, synch stop or
3 machine check alert signal based upon the type of event that occurred.

1 29. The medium of claim 11 comprising an instruction for dynamically
2 masking events that occur based on conditional probabilistic calculations using
3 machine learning algorithms.